

APPROVED	I.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

$\text{Ga}_x\text{Al}_{1-x}\text{N}$ ($0 \leq x \leq 1$) CRYSTAL

AlN SINGLE BUFFER LAYER

SAPPHIRE SUBSTRATE

FIG. 1

$\text{Ga}_x\text{Al}_{1-x}\text{N}$ ($0 \leq x \leq 1$) CRYSTAL

$\text{Ga}_y\text{Al}_{1-y}\text{N}$ ($0 < y \leq 1$)
SINGLE BUFFER LAYER

SAPPHIRE SUBSTRATE

FIG. 2

106050-98200/60

106050-9E200/60

APPROVED	O.G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

PAP110-PCT

- 2/7 -

09/700236

$\text{Ga}_x\text{Al}_{1-x}\text{N}$ ($0 \leq x \leq 1$) CRYSTAL
GaN
GaN
SAPPHIRE SUBSTRATE

GaN/GaN DOUBLE
BUFFER LAYER

FIG. 3

106050-98200260

APPROVED	D.G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

PAP110-PCT

- 3/7 -

09/700236

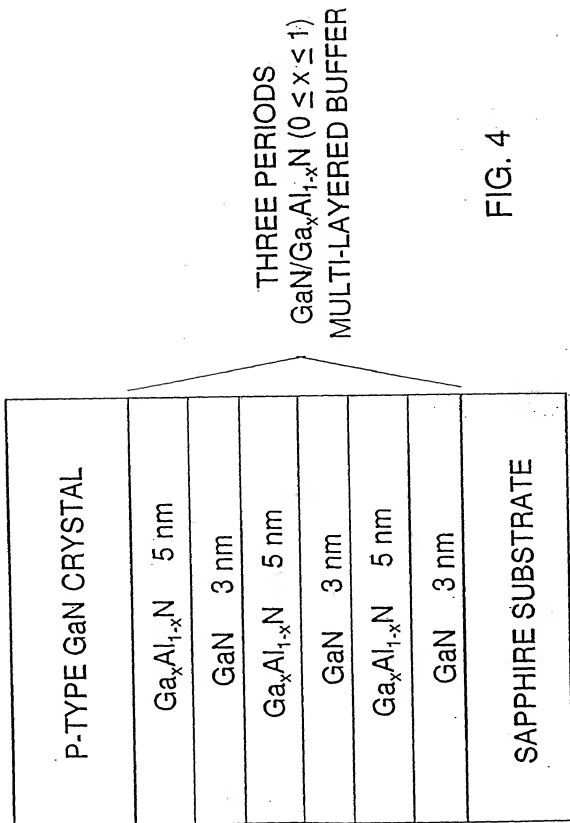


FIG. 4

106050" 9E200Z60

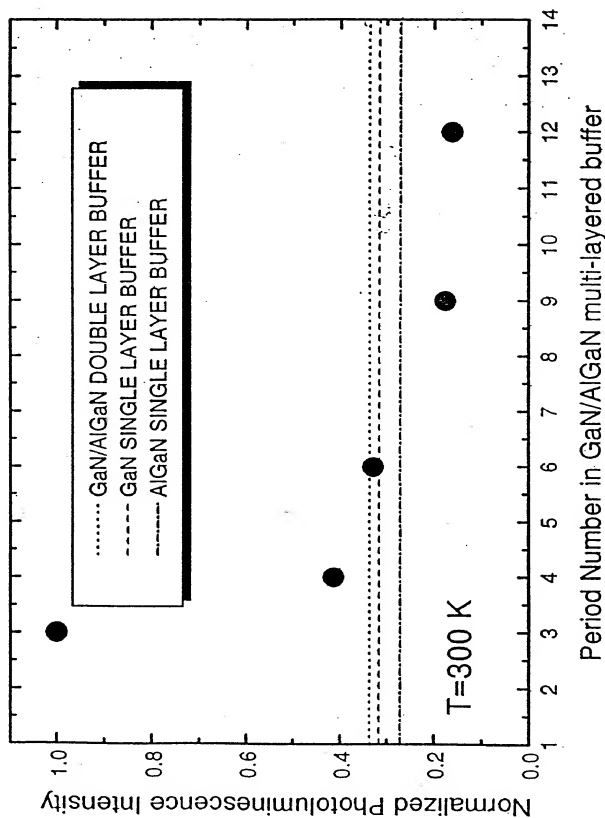
APPROVED	O.G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

PAP110-PCT

09/700236

- 4/7 -

FIG. 5



106050*9E200760

APPROVED	0 G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

PAP110-PCT

09/700236

- 5/7 -

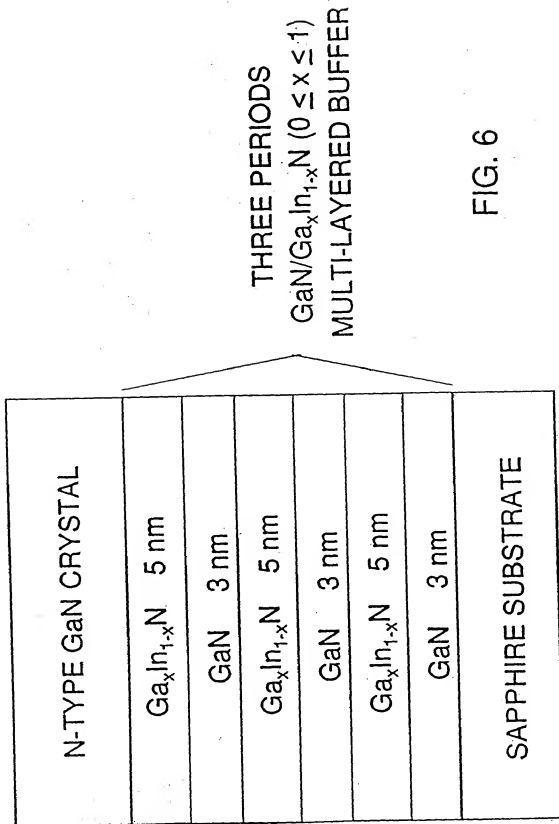


FIG. 6

106050-9E200/60

PAP110-PCT

09/700236

APPROVED	O.G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

-6/7-

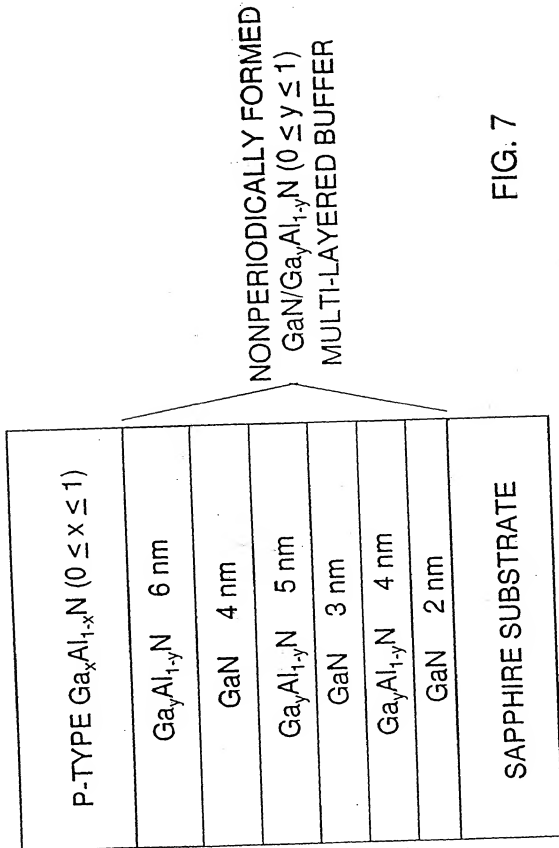


FIG. 7

106050-98200Z60

APPROVED	O.G. FIG.
BY	CLASS/SUBCLASS
DRAFTSMAN	

PAP110-PCT

- 77 -

COMPOSITION-VARIED
GaN/Ga_yIn_{1-y}N ($0 \leq y \leq 1$)
MULTI-LAYERED BUFFER

N-TYPE Ga _x Al _{1-x} N ($0 \leq x \leq 1$)
Ga _{0.8} In _{0.2} N 5 nm
GaN 3 nm
Ga _{0.85} In _{0.15} N 5 nm
GaN 3 nm
Ga _{0.9} In _{0.1} N 5 nm
GaN 3 nm
SAPPHIRE SUBSTRATE

FIG. 8

09/700236